Circa 1966

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C&C 1666

MANUAL

CONTROLLED RANGE NETWORK

STANDARD OPERATING PROCEDURES

25X1

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MANUAL

CONTROLLED RANGE NETWORK

Standard Operating Procedures

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SECTION I

INTRODUCTION

This manual is intended to reflect the procedures and techniques which have proven to be the most effective for successful implementation of CORN field operations. Situations will occur that are not covered in this document; however, when they do occur, INSTANT communication with the Range Manager [redacted] is required to determine a rapid and feasible solution. It must be firmly stated that constant communication between all involved field units and the Range Manager must be maintained throughout any Operating Period. The "Operating Period", as used in this context, is defined as that time period which starts upon receipt of a Long Range Forecast and terminates upon submission of the Operational Recap. This definition will hold for all parties involved in CORN operations.

25X1

Section II of this manual describes the overall CORN operations, and Appendixes A through D deal with specific aspects of the CORN operations.

Your compliance with these procedures and your total effort will be required to provide acceptable results for this program.

SECTION II

GENERAL PROCEDURES AND TECHNIQUES FOR CORN OPERATIONS

COMMUNICATIONS

The first of three messages received by the Range Manager in the activation of a normal CORN Operation is the Long Range Forecast (LORAF) (Fig. 1, page 3). This message is transmitted by the requester approximately six days in advance of the first day of operation. The information contained in the LORAF is as follows:

1. Dates of operation
2. Display time during day of operation
3. Location of display in coordinates and position relative to landmarks, e.g., city, highway junctions, etc.
4. Azimuth. (The true bearing or angular orientation from True North of the long axis of the display corridor.)
5. Required target array
6. Program designator, i.e., Program A, B, or C.

Upon receipt of the LORAF, the Range Manager will assign the support task to the field unit that can most economically and expediously comply with the request.

This advance alert notice will allow the field units to schedule their normal work loads around the projected CORN schedule and to assign the necessary personnel as communication contact and crew members. The LORAF will always be transmitted by TWX.

The second and third messages received by the Range Manager are transmitted as one message (Fig. 2., page 3). They are:

1. Final Confirmation Message (FICOM) (See Fig 2, page 3)
2. 48 hour Forecast (The "48) (See Fig. 3, page 4)

The FICOM contains the same type of information as the LORAF with the exception of two important points.

1. The FICOM confirms the operation.
2. Contains all final changes pertinent to operation called for in the next twenty-four hour period.

The "48" alerts the Range Manager to any change in location for the operational display scheduled 48 hours after receipt of message. The information is general and not final. It includes general coordinates and will indicate location by landmark, e.g., city, highway junction, etc. The purpose of this message is to guide the field units close to the anticipated display area.

1. THIS IS A CORN COMMUNICATION. 7 OCTOBER 1966
2. REQUEST SUPPORT FOR THE FOLLOWING DATES/TIMES/LOCATIONS.

13 Oct/1600Z TO 1800Z	KEOKIK MUNI AIRPORT/IOWA	4028N 09126W
1745Z TO 1945Z	TUCUMCARI/NEW MEXICO	3510N 10350W
14 Oct/1600Z TO 1800Z	NEAR MERIDIAN MISS./ON IR 20	3222N 08843W
1730Z TO 1930Z	NEAR WINSLOW/ARIZ.	3500N 11044W
15 Oct/1530Z TO 1730Z	WRIGHT PATTERSON AFB/OHIO	3946N 08406W
1700Z TO 1900Z	NEAR MILES CITY/MONT.	4624N 10547W
16 Oct/1500Z TO 1700Z	US 19/NEAR FIARMONT/W. VA.	3930N 08008W
1645Z TO 1845Z	NEAR LEMMON/S. DAK.	4555N 10209W
1645Z TO 1845Z	NEAR CHAPPEL/NEB./US 30	4106N 10228W
1645Z TO 1845Z	DALHART MUNI AIRPORT/TEX.	3200N 10233W
1645Z TO 1845Z	US 62/180 NEAR SEMINOLE/TEX.	324230N 10240W

3. AZIMUTH IS 188 DEGREES
4. USE 51/51 "T" AND 80 FT. EDGE TONE PANELS. USE PSEUDOSINC AND POINT SOURCE WHEN AVAILABLE. USE THE H1 "T" AT WRIGHT PATTERSON ON 15 OCTOBER.
5. THIS IS FOR PROGRAM A.
6. LOCATION AND TIMES WILL BE UPDATED DAILY. ITEMS BEYOND 13 OCT ARE PRELIMINARY AND ARE FOR GENERAL LOCATION ONLY.

BT

Figure 1. Example of LORAF Message

1. THIS IS A CORN COMMUNICATION
2. REQUEST SUPPORT FOR FOLLOWING DATES/TIMES/LOCATIONS

NOTE: These instructions supersede those in CORN Communication dated 7 Oct. 1966

13 Oct/1600Z TO 1800Z	PEORIA/ILLINOIS	4040N 08940W
1645Z TO 1845Z	AMARILLO/TEXAS	3513N 10155W

3. AZIMUTH IS 188 DEGREES
4. USE 51/51 "T" AND 80 FT. EDGE TONE PANELS. USE PSEUDOSINC AND POINT SOURCE WHEN AVAILABLE.
5. THIS IS FOR PROGRAM A.
6. 14 Oct. 1966 ANTICIPATE DISPLAYS FOR THIS DATE TO BE

US 80/20 MILES WEST OF MONTGOMERY, ALABAMA	3215N 08640W
US 66/5 MILES EAST OF GALLUP/NEW MEXICO	3519N 10839W

7. FICOM FOR 14 Oct. 1966 WILL BE TRANSMITTED 12 Oct. 1966

BT

Figure 2. Example of FICOM Message (Items 1 - 5)

1. THIS IS A CORN COMMUNICATION
2. REQUEST SUPPORT FOR FOLLOWING DATES/TIMES/LOCATIONS
NOTE: These instructions supersede those in CORN Communication dated 7 Oct. 1966

13 Oct/1600Z TO 1800Z	PEORIA/ILLINOIS	4040N 08940W
1645Z TO 1845Z	AMARILLO/TEXAS	3513N 10155W

3. AZIMUTH IS 188 DEGREES
4. USE 51/51 "T" AND 80 FT. EDGE TONE PANELS USE PSEUDOSINC AND POINT SOURCE WHEN AVAILABLE.
5. THIS IS FOR PROGRAM A.

6. 14 Oct. 1966 ANTICIPATE DISPLAYS FOR THIS DATE TO BE

US 80/20 MILES WEST OF MONTGOMERY, ALABAMA	3215N 08640W
US 66/5 MILES EAST OF GALLUP/NEW MEXICO	3519N 10839W

7. FICOM FOR 14 Oct. 1966 WILL BE TRANSMITTED 12 Oct. 1966

BT

Figure 3 Example of "The 48" Message (Items 6 7)

The information contained in the FICOM and The "48" will be relayed from the Range Manager to the field units immediately upon receipt.

The relay will be made by one of two possible communication routes. They are

1. If Range Manager receives alert notice from the requester on a week day during working hours, the assignment to field unit will be made via TWX.
2. If Range Manager receives the alert notice from the requester on a week day after working hours or on the weekend, the assignment will be made by telephone to the field unit with a confirming TWX to be sent the next day.

The field units will check the following items before leaving home office.

1. Alert information
2. Required targeting
3. Instrumentation
4. Phone number of contact and alternates at field unit home office
5. Phone number of contact and alternates of [redacted] 25X1

25X1 The following list of numbers are those of key individuals at [redacted] Field units will call the Range Manager at [redacted] in case of ANY emergency. 25X1

25X1

[redacted]

Each field unit must call their home office at intervals not exceeding two hours, at which times they will give notice of their present position and, in turn, will be notified of any changes that have transpired since their last contact. When it is necessary for the field unit to remain in overnight lodgings, the person in charge will notify the home office of their location and the phone number where they may be reached. The field unit must also call the home office in the morning before leaving the motel and prior to target deployment to determine if any updated information has been reported.

Immediately after the targets have been displayed, the CORN recap must be transmitted from the field unit to their home offices. The information, in turn, must be teletyped to the Range Manager. This communication must be accomplished on the day of the target display.

If all adhere to the procedure outlined above there will never be more than a two hour interval between the time the Range Manager receives an alert change and its relay to the field units.

TARGET DISPLAY AND PRIORITY

An established priority for target deployment by every requester is required. The following table lists the nomenclature (code) to be used in requesting targets. The sequence, or order in which the coding symbols are stated by a specific requester, will indicate the exact deployment priority for each target-type involved in an operation.

TARGET SYMBOLIZATION AND DEFINITION TABLE

CODE	TARGET DEFINITION
MT	Medium Contrast "T" Bar
ST	51/51 "T" Bar
ST M	51/51 "T" Bar from Ma[illegible]
HT	High Contrast "T" Bar
10	10 Foot Edge Analysis
50	50 Foot Edge Analysis
100	100 Foot Edge Analysis
200	200 Foot Edge Analysis
200	200 Foot Edge Analysis
FSS	Five Step Gray Scale
TC	Tri Color
PS	Pseudoscope
MS	Military Standard
PP	Point Source
[illegible]	Other will be [illegible]
M[illegible]	Medium Contrast "T" (Special)
M[illegible]	Medium Contrast "T" (Special)
M[illegible]	Medium Contrast "T" (Special)
M[illegible]	Medium Contrast "T" (Special)
H[illegible]	High Contrast "T" (Special)
H[illegible]	Masonite "T" (Special)

ILLEGIB

CONTINGENCY PROGRAMS

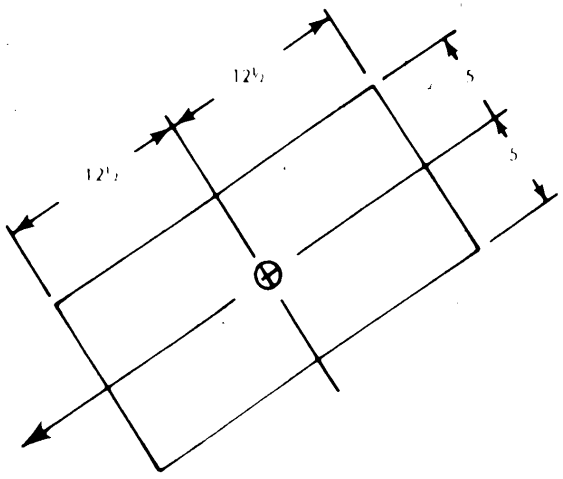
There are three contingency programs for CORN operations. Programs A, B, and C (See Figures 4, 5, and 6. Pages 7, 8, and 9.) Program designators will be used when possible to reduce quantity of information transmitted from requester to Range Manager or field units.

ADDITIONAL DATA

The following data, in addition to the target deployment priority must be supplied by the requester for dissemination to the field unit.

1. Date of operation.
2. Time i.e., duration of operation expressed in GMT Zulu (Z) time.

Filter: Wratten 21 or 25 (the filter type will be specified)
Film: 3404
Time: Inclusive display time in Greenwich Mean Time (Z)
Target Limitation (nautical miles)



238° AZIMUTH

CORRIDOR EQUALS 10 - 25 NAUTICAL MILES ALONG AZIMUTH

⊗ GROUND ZERO (INTERSECT POINT OF COORDINATES)

Figure 5. Explanation For CORN Alert Contingency Program B

Filter: Wratten 12
Film: 3404
Time: Inclusive display time in Greenwich Mean Time (Z)
Target Limitation (nautical miles)

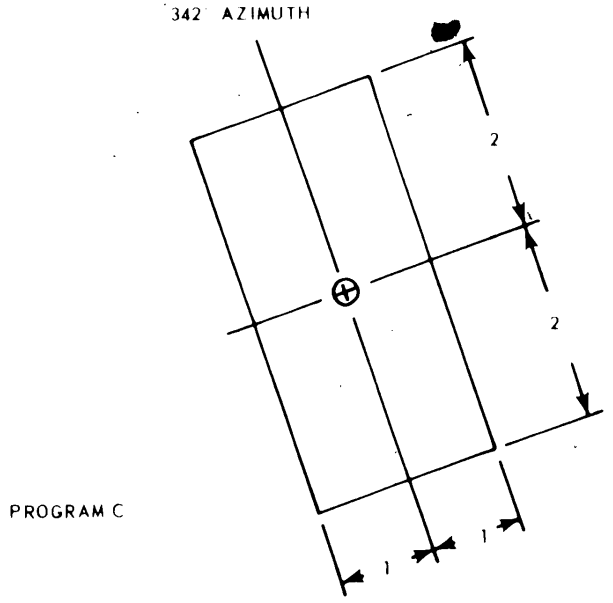


Figure 6. Explanation For CORN Alert Contingency Program C

3. Geographical location coordinates (degrees, minutes, seconds).
4. Azimuth
5. Radius of operation or program designator from requested coordinates (maximum allowable distance from specified coordinate in nautical miles).
6. Exact Instrumentation
   a. Hasselblad Camera.
   b. Film and Filter to be used with Hasselblad Camera.
   c. Spectra Brightness Meter.
   d. Nikon Sky Camera.
   e. Other - will have to be stipulated and mutually agreed upon.

FIELD UNIT PROCEDURES

PRELIMINARY PLANNING. Upon receipt of alert information (LORAF, FICOM or "48" each field unit will plot coordinates on maps provided by Range Manager. Using Coordinates as center points, the applicable corridor will be plotted with furnished corridor template. Corridor templates are labeled to indicate both scale of map to be used and program designator, e.g., Program A, B, or C, required. General terrain conditions within the specified corridor must be scrutinized for potential display areas. If an airfield is located within the corridor, a special effort will be made to gain permission to use this area. If the corridor is found unsatisfactory for target display, the Range Manager will be notified immediately for further instructions.

The crew chief will plan a schedule to allow sufficient time for:

1. Travel
2. Site Location
3. Securing permission to display
4. Land Clearance (shrubs, etc.)

The laminated check list is provided for use as a guideline to insure a properly executed operation; use it! (Refer to Appendix C, Fig. 16, page 33.)

ON-SITE PROCEDURES

TARGET ORIENTATION. The alert information will contain the required target orientation as an azimuth. This is the angle between true North and the target "Lay-down" line. It can be determined by a simple technique. One procedure is as follows.

1. Read from the topographic map the local magnetic declination (magnetic variation on aeronautical charts) to determine both direction and magnitude, E 21° 30' or W 16° 42'.
2. Adjust the azimuth provided in the alert message for the local magnetic declination by ADDING WEST declination or SUBTRACTING EAST declination.

3. The adjusted azimuth is then set under the needle of the K & E Recon compass (Fig. 7, page 12) which always points to magnetic North.

4. The line now described by the notations N (North) and S (South) on the K & E Recon compass will be the "Lay-down" line.

Example:

Given: Azimuth (True Bearing) 140°
Mag. Declination E 20° 00'

Procedure:

1. 140° - 20° = 120°

2. Place the 120° mark under compass needle pointing to magnetic North.

3. Compass N-S (North-South) line now describes "Lay-down" line.

There will be no turning of compass face!!!

Once the "Lay-down" line is determined and positioned, the crew will start to lay out the targets as described in Appendix A.

NOTE

Remember that a minimum of twenty (20) feet is required between targets.

The instrumentation will be set up no less then thirty minutes prior to operating time. Unless otherwise specified, the Hasselblad will always be mounted over the Edge Analysis target. Operating procedures for instrumentation will be found in Appendix B.

CAUTION

Extreme care should be given these instruments. They are some of the finest pieces of equipment in the country but they will not stand up under improper handling.

Upon completion of the target display and setting up of the instrumentation, the crew chief is responsible for making certain that the Site Manning Report, the Location Report, and the Operational Recap sheet are filled out. Additional explanatory information is presented in Appendix C. A complete sketch of the target display and the surrounding area must be drawn on the Location Report form provided. The location references must include points on the source map (e.g.), 6-1/2 miles SW of Love Field, Dallas, Texas). Also, the actual times (GMT, Zulu) when the various targets were deployed must be recorded, including time of start and time of completion of each individual target (inclusive time). If deployment of any target extends to a time later than the specified start-of-operation time, the time of start and time of completion of deployment of each panel laid after the specified start-of-operation time must be recorded in the proper box at the top of the Location Report and in the proper spaces in the Site Manning Report. The data on the Operational Recap sheet must be relayed immediately to each subcontractor's home office at the completion of each day of operation. This information is, in turn, transmitted to [redacted] the same day. 25X1

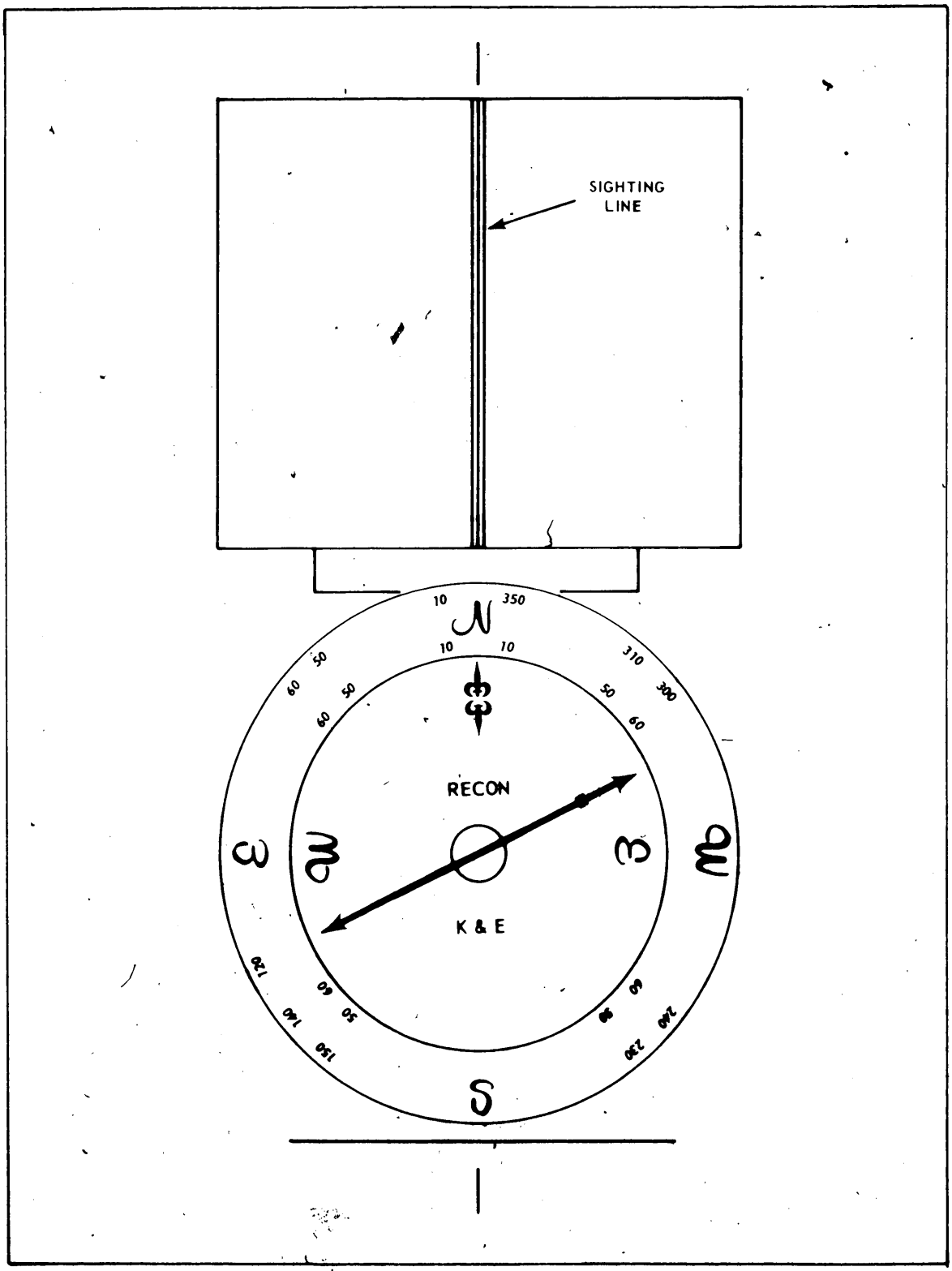


Figure 7. K & E Recon Compass

Site Manning Reports are to be filled out in duplicate, and the ORIGINAL field copy must be sent via Air Mail, Special Delivery to Range Data. For additional information, refer to Appendix C.

After the operation has been completed, dismantle and pack all of the instrumentation and make special notations of any equipment malfunction and/or anticipated future trouble. The targets may then be folded and placed in the truck. (While folding the targets, be sure to tag any panel that is damaged, so that it may be repaired before the next operation.) The crew chief will make a final tour of the display area before leaving to make certain that no equipment will be left behind. The field unit will then proceed as scheduled.

Upon return to the home facility, all equipment will be cleaned and made ready for the next alert. (Expendable supplies will also be checked and replenished, i.e., logs, film, mailers, etc.) For additional information, refer to Appendix D.

APPENDIX A

TARGETS

MOBILE TARGET DISPLAY

There will be no exceptions to the following general rules.

1. Target display will always be referenced to a given azimuth (true bearing).
2. Targets will always be twenty (20) feet apart.
3. Do not walk on targets. (Footprints show!)

4. Do not stretch targets out of shape.
5. Smooth wrinkles from each target. (Wrinkles cause a photographic problem!)

6. Be sure the area is clear of vegetation that will hamper proper target display.
7. Targets shall be arranged in truck in such a manner that minimum amount of time is required for off-loading at site.

51/51 "T" BAR TARGET
(See Figure 8, page 16.)

Starting at point "A", stretch a string for 400 feet along the azimuth line. Make sure the line is straight and taut.

On the left of Line No. 1 distribute Panels No. 1 through 9, starting with Panels No. 1 at point "A". To the right of Line No. 1 distribute Panels No. 1a through 9a, with No. 1a opposite No. 1, No. 2a opposite No. 2, etc.

Unfold Panels No. 1 and No. 1a. Starting at point "A", peg panels No. 1 and No. 1a along the string; making sure that string is straight. When this has been accomplished, proceed on down the line, joining No. 2 and No. 2a, No. 3 and No. 3a, etc.

After Panels No. 1 and No. 2 are pegged along Line No. 1, they can be pegged together, keeping the gray on top of the black. At this point it must be emphasized that if Panel No. 1 is NOT laid out square with Line No. 1 and if the bars on Panel No. 1 are not perpendicular to Line No. 1 it will be impossible to peg the other panels together and still maintain a straight line along the Azimuth. Proceed on down the line pegging No. 2 and No. 3 together, No. 3 and No. 4, etc.

At this time Panels No. 1a, No. 2a, etc., can be stretched out and pegged together. Panels No. 1b, No. 2b, No. 3b, etc., can also be spread out and pegged to No. 1, No. 2, No. 3, etc. After Panels No. 1, No. 1a, and No. 1b are spread out and pegged Panel No. 1c can be attached.

At this point, Leg No. 1 will be complete. Leg No. 2 is laid out the same as Leg No. 1.

OTHER "T" BAR TARGETS
(See Figure 9, page 17.)

The same general deployment procedures as outlined for the 51/51 "T" Bar Target can be followed for the high and medium contrast "T" Bar Targets.

EDGE ANALYSIS TARGET
(See Figure 10, page 18.)

Two important rules to follow when displaying the Edge Analysis Target are:

1. The edges will be straight.
2. There will be no gaps between panels.

Position and stretch string on the azimuth for Edge No. 1. Place enough panels along this string to make up the required length of "Edge" requested in the alert. After unfolding these panels, start at point "A"; and peg down along the string to make a perfectly straight line; i.e., be sure that your string is not bowed. Work from point "A" to point "B".

After Edge No. 1 has been pegged down properly, stretch a string from point "A" at right angles to Edge No. 1 for Edge No. 2. Repeat the same procedure as for Edge No. 1, working from point "A" to point "C".

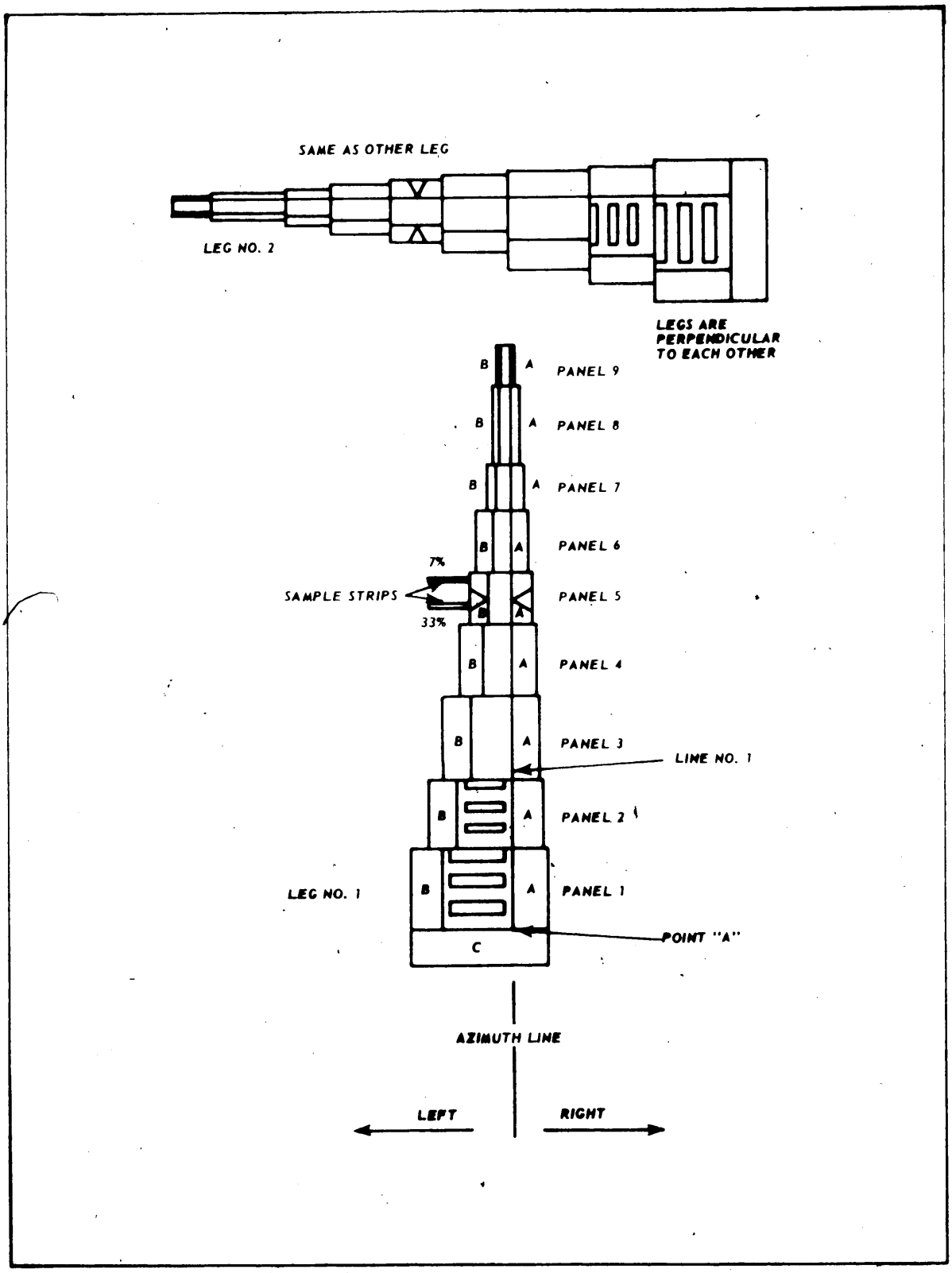


Figure 8. 51/51 "T" Bar Target

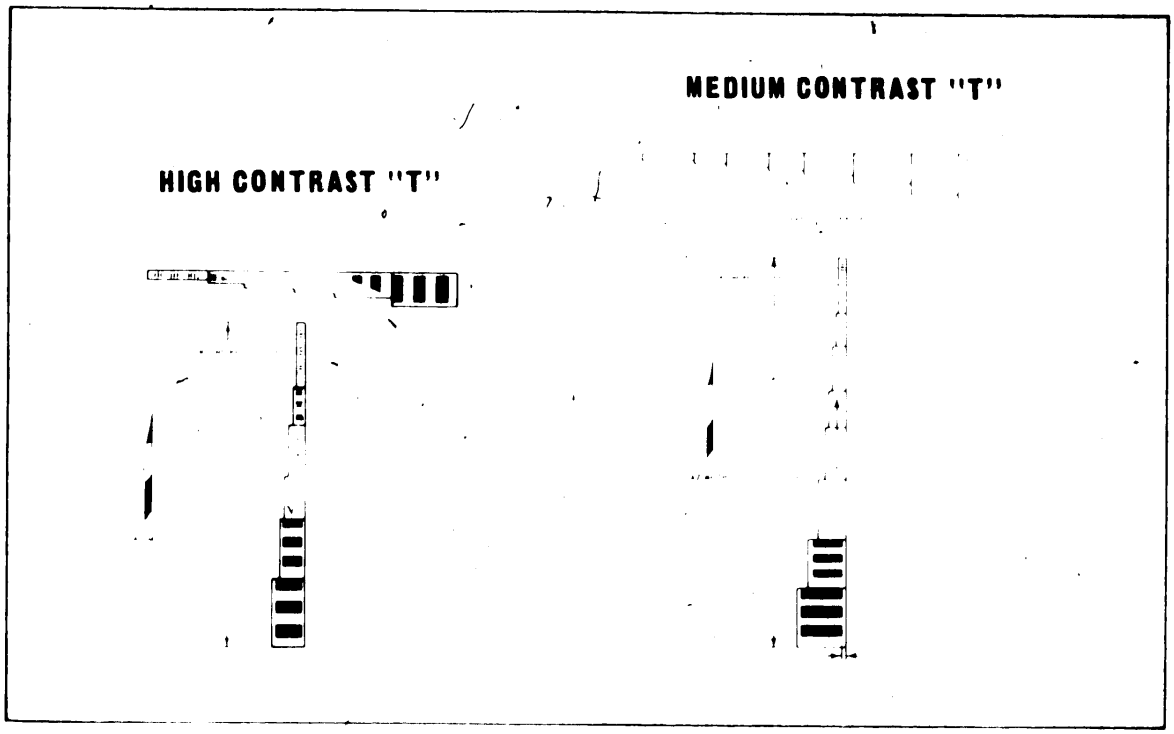


Figure 9. Other "T" Bar Targets

After both edges have been laid down straight and perpendicular, the remaining panels can be unfolded and pegged together. As a general rule, always start at point "A" and work out from there.

MILITARY STANDARD 150A TARGET
(See Figure 11, page 19.)

Stretch a string from point "A" to point "B" along heading given in Alert.

Place Panel No. 1 at Point "A" and No. 2, No. 3 and No. 4 along the string with No. 4 closest to point "B". Unfold and peg these together along the string. Note that bars on these panels (No. 1 through 4) must be perpendicular to the string.

Panels No. 5, 6, 7, and 9 are next and will be placed adjacent to the first four panels, with No. 5 next to No. 1, etc. Unroll and peg them. Note that the bars on these panels should be perpendicular to the bars on Panels No. 1 through 4. Continue this procedure through Panel No. 20.

GRAY SCALE TARGET
(See Figure 12, page 21.)

The Gray Scale Target will be displayed perpendicular to the azimuth.

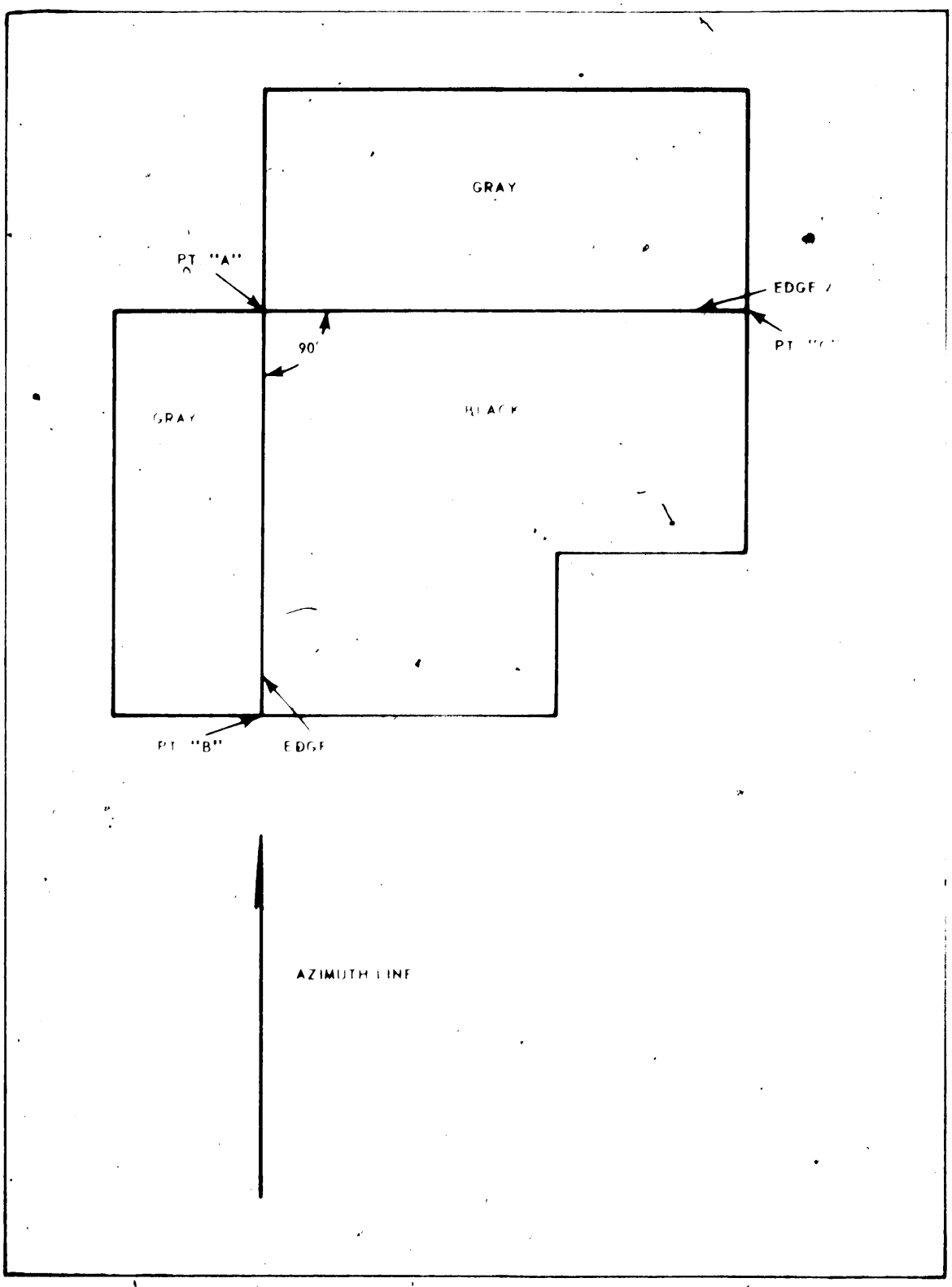
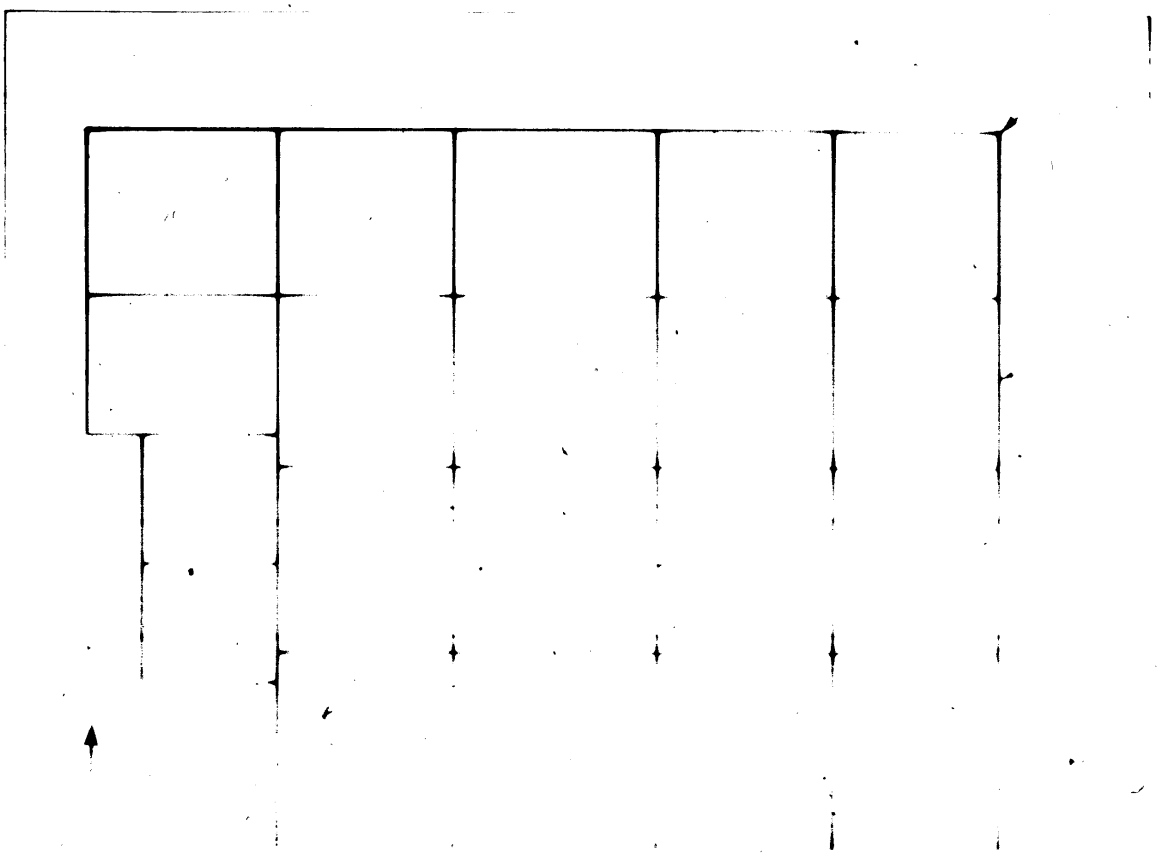


Figure 10. **Edge Analysis Target**



TRI-COLOR TARGET
(See Figure 12, page)

This target consists of three canvas panels, [illegible] blue colors. These panels will be displayed in a straight line perpendicular to the azimuth of "Lay-down" line. This target is displayed in red, green, blue sequence with the red panel always positioned toward either the north or west of the array, depending on the [illegible] line azimuth.

POINT SOURCE TARGET

The point source is a highly-polished metal dome 19 1/2 inches in diameter that is displayed in the center of the blue panel of the tri-color target. Upon special request, the

point source can be displayed in the center of the black patch of the MIL-STD 150A target.

PSEUDOSINC TARGET
(See Figure 12, page 21.)

This is a special target and will be displayed only upon special request. Two identical panels 25 x 60 feet constitute the target. The panels will always be displayed perpendicular to each other, with one leg oriented parallel to the azimuth (true bearing).

FOLDING

To fold canvas panels after the operation is complete, take the outside edge (away from the line) of each panel, and fold it completely over to the other side; thus, completely covering the target side of the panel. Continue folding in halves until the panel is about three feet wide. Starting at the far end (away from point "A") fold in half and start rolling to the end. Tie and verify that the panel number is visible for future use.

TYPICAL DISPLAY

Figure 12, page 21 illustrates a properly displayed complement of targets.

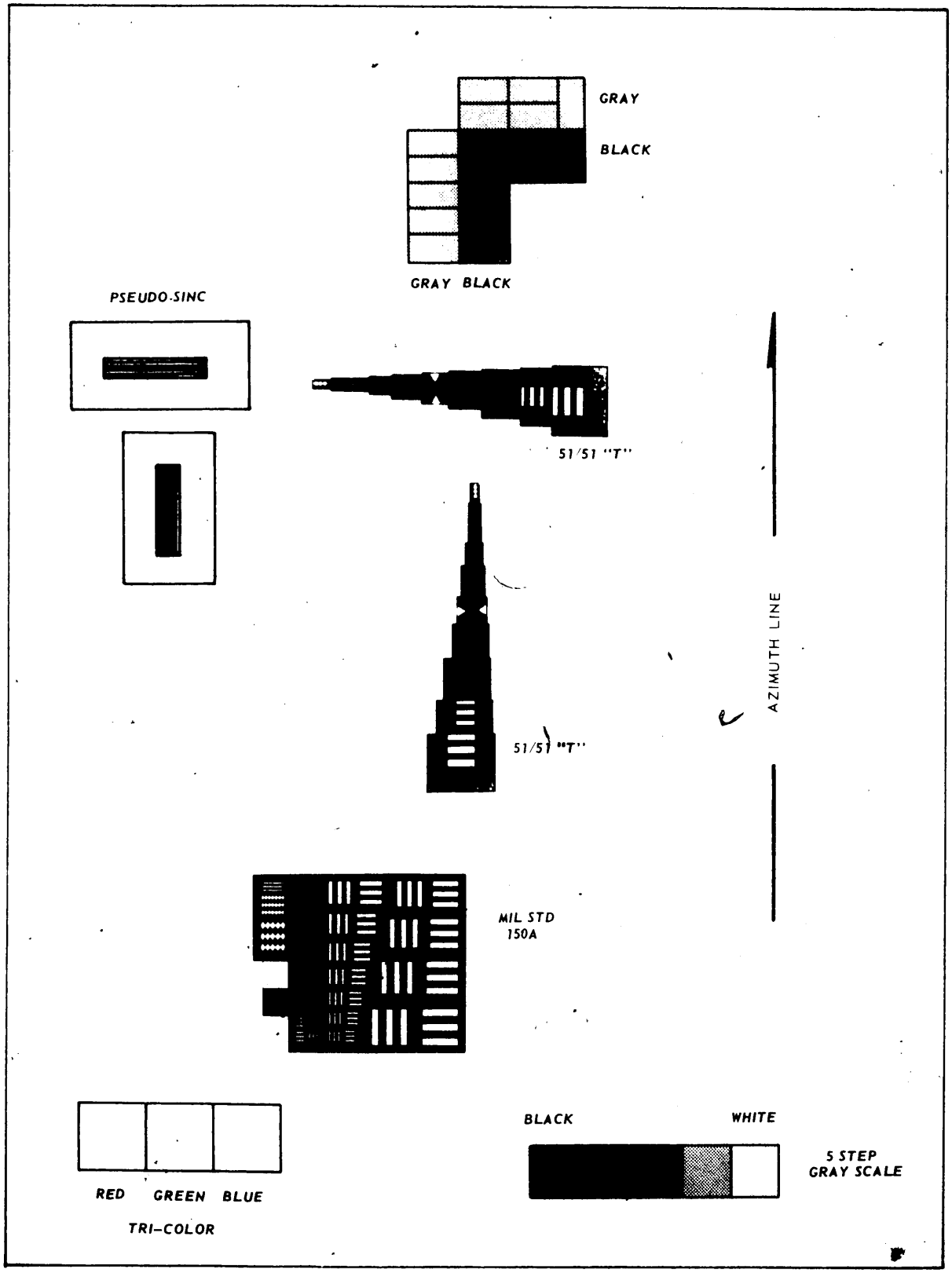


Figure 12. Properly Displayed Target Complement

APPENDIX B

INSTRUMENTATION

NOTE

All instrumentation readings or exposures are to be made simultaneously at whatever time interval is specified.

HASSELBLAD CAMERA, MODEL 500 EL

GENERAL. The Hasselblad 500 EL is an electric motor driven, 2-1/4 x 1-3/4 inch, single lens reflex camera on which a series of interchangeable camera components and accessories may be installed. The motor is powered by a single rechargeable battery, which will deliver energy for 1 000 exposures on a full charge. A full charge requires 12 hours.

METHODS OF EXPOSURE. The five mode settings on the selection scale are:

a. "O" normal setting

b. "S" speed setting

c. "SR" speed repeat setting

d. "A" automatic setting

e. "AS" automatic speed setting

NOTE

The normal setting of "O" will be the only mode setting used. No other setting will be used at anytime.

SHUTTER SPEED. The shutter speeds are arranged in a geometrical progression from one second to 1/500 second and B (time exposure). The scale graduations are equidistant and include B, 1, 2, 4, 8, 15, 30, 60, 125, 250, and 500.

DIAPHRAGM. The standard lens diaphragm scale includes f/2.8, f/4, f/5.6, f/8, f/11, f/16, and f/22.

BATTERY RECHARGING UNIT. This unit is adjustable for operation on either 110 or 220 volt ac mains. Before plugging the unit into a wall receptacle, it is to be adjusted for the right voltage. The battery must be charged while it is in the battery compartment of the camera. Do not over-charge the battery. A fully discharged battery requires 12 hours of charge to restore it to near maximum capacity. A partially discharged battery must be charged for a period of 40-60 seconds for each exposure made.

LENS CLEANING. BEFORE OPERATING, INSURE THAT THE LENS IS FREE FROM ALL DIRT AND SMUDGES. FIRST USE SYRINGE TO BLOW DUST OFF LENS THEN FOLLOW WITH LENS TISSUE FOR CLEANING TO PRECLUDE SCRATCHING THE LENS.

MAGAZINE LOADING. Film magazines must be loaded and unloaded in total darkness. A SAFELIGHT CANNOT BE USED. The FILM WINDOW LOCATED ON THE BACK OF THE MAGAZINE MUST BE TAPED BEFORE LOADING THE FILM. After the film is loaded,

turn the film advance knob twenty (20) complete turns to insure that there will be a three-foot leader. THERE MUST BE AT LEAST THREE FEET OF LEADER AND TRAILER.

NOTE

The camera will not operate, unless the battery compartment cover is properly fitted into place and the magazine slide is removed.

CAMERA CYCLING. After a maximum of four (4) exposures, turn the exposure counter back to one.

CAUTION

Never exceed four (4) exposures.

This will insure proper spacing between photographs. A maximum of thirty-two (32) exposures may be taken on one full magazine.

HASSELBLAD OPERATIONAL CHECK LIST

1. Set Exposure Selector and Time Lever to "O".
2. Attach filter holder and required filter. DO NOT TOUCH FILTERS WITH FINGERS.
3. Load film magazines. USE BLACK LOADING BAG ONLY.
4. Mark emulsion number on magazine and whether film has or has not been advanced.
5. Attach sun shade.
6. Set focus for 9-1/2 feet.
7. Set correct ASA setting in light meter and determine proper shutter speed and f/stop.
8. Set shutter speed and f/stop settings on camera.
9. Remove sliding boom from ladder.
10. Orient ladder to north side of edge analysis target, unless other target is specified.
11. Position ladder so that camera will photograph equal parts of black and gray panels of edge analysis target.
12. Anchor ladder securely.
13. Attach camera to sliding portion of boom.
14. Attach 20 foot release cord to front of battery compartment.
15. Remove slide from magazine.
16. Place camera and sliding portion of boom on ladder.
17. Place "Calibrated Gray Neutral Test Card" under the mounted Hasselblad camera and on the gray and black edge of the edge analysis target.
18. Remember to recycle camera after every four (4) exposures.
19. Fill out identification blackboard for the first and last exposure of each run. This

card will include name of crew, location, date, GMT, and Start or Stop. Position this identification card in the center of the photo format. The number of Hasselblad photos (Pix No) will not include the beginning (Start) or ending (Stop) indentification pictures. The Pix No should only reflect that quantity of operational exposures.

20. Make every attempt to keep camera shaded.

21. Mail exposed film via Air Mail Special Delivery (package film to insure against damage in shipment) to:

25X1

NIKON CAMERA, MODEL F

NOTE

Nikon camera to be operated by Special Request only.

1. Load the Nikon Camera prior to departure for the target area, and unload upon return.
2. Color film will be used in the camera, unless another kind is designated.
3. The filter selector located on the fish-eye lens should be placed in the LAI (Clear Filter) position and taped to prevent the filter wheel from moving to another position.
4. Determine with the exposure meter the correct f/stop and shutter speeds for the film used.
5. When not in use, the camera will be kept in the shade with the lens cap on.
6. Sky photos should be taken every fifteen minutes and recorded on the site manning report.
7. An identification exposure must be made on each roll of film. The identification card should be five feet from the camera and contain the date and location.
8. Upon completion of the mission, the film will be removed from the camera and placed in the film can. It will then be placed in the provided film mailer and sent to the nearest Eastman Kodak processing branch with the return address of Data Corporation. (ALWAYS INSERT "DO NOT MOUNT" IN THE BLOCK PROVIDED FOR SPECIAL INSTRUCTIONS).

ADDITIONAL NIKON CAMERA INSTRUCTIONS

1. The lens will NOT be dismounted from the camera body.
2. The lens will be cleaned ONLY by use of the provided lens brush or lens tissues. Thorough lens cleaning will be accomplished as needed during periodic equipment inspections by the Range Manager.
3. The camera lens will be exposed to the sky for NO LONGER THAN FIVE SECONDS AT A TIME to minimize damage to the shutter from solar burn.

SPECTRA BRIGHTNESS SPOT METER, MODEL SB

1. Upon arrival of the field unit at the target site, the brightness meter will be turned on to allow for proper warm-up time. (Allow a minimum of one-half (1/2) hour.)
2. Install the brightness meter on the tripod. Extend tripod so the meter is five feet above the magnesium oxide disc. Focus the meter optics upon the disc.

NOTE

The magnesium oxide disc is used as a target to read the incident light. The disc is designed to reflect approximately 97 percent (National Bureau of Standards) of the incident light. The data read from the disc is well within the accuracy of the brightness meter.

3. Check zero of meter before each reading.
4. Readings will be taken every fifteen minutes on the disc and on all targets displayed. Record these values on the Site Manning Report. Reflectance readings must be taken rapidly and legibly recorded as fully written out footlambert values, i.e., 12 500 (not 12.5K).
5. Anticipate the sun angle for your hours of operation and locate the tripod so that the legs will not cast a shadow in the area to be scanned. Use the same area of each target for all readings.
6. The meter will be positioned at five feet above the disc for each reading.
7. If dirt collects on the magnesium oxide disc, a hard eraser may be used cautiously to remove this residue.

LIGHT (EXPOSURE) METER, BROCKWAY MODEL S

1. Bright Light Slide No. 1 should be inserted behind photo sphere and remain there at all times.
2. Set the correct ASA rating of the film being used in the ASA index window. ASA numbers of all color films will be found in the film exposure instructions.
3. To obtain the correct camera setting, the exposure meter must be placed directly on the target. Rotate dial until red IN pointer is set to number of dial scale which corresponds to number indicated by needle, i.e., if needle indicates 5.6, turn red IN pointer on dial to 5.6 on dial scale. All combinations of shutter speed and f/stop for correct exposure will then appear on lower half of dial. For example, with an ASA index of 10 and a needle indication of 5.6, correct exposure would be 1/50 second at f/5.6. Any other combination of shutter speed and f/stop which are matched together may be used. PREFERENCE: Utilize the fastest shutter speed possible to minimize any vibrations in the camera mount.
4. See next page titled "Hasselblad Film/Filter/ASA Combinations Table" for correct ASA settings as a function of film/filter combinations.

HASSELBLAD FILM/FILTER/ASA COMBINATIONS TABLE

Film Emulsion No.	Filter No.	ASA Setting
3400	No filter	
3400	Wratten No. 12	
3400	Wratten No. 21	
3400	Wratten No. 25	
3400	Wratten No. 8	
3401	No filter	
3401	Wratten No. 12	320
3401	Wratten No. 21	250
3401	Wratten No. 25	200
3401	Wratten No. 8	160
3404	No filter	
3404	Wratten No. 12	7
3404	Wratten No. 21	5
3404	Wratten No. 25	4
3404	Wratten No. 8	10

APPENDIX C

FORMS

SITE MANNING REPORT FORM
(See Figure 13, page 28.)

1. This report will be made in duplicate, the original being forwarded to [redacted] 25X1 and the second copy retained at the field unit home office.
2. The general entries at the top of the form are self-explanatory.
3. The name of the mobile crew, e.g., Omaha, Pueblo, Tucson, etc., will be listed where "Operator" is indicated. Also enter the crew chief's name.
4. All blocks will have entries, either a vertical line through a nonpertinent column, a horizontal dash through a nonpertinent block or ditto marks to denote repetition or no change. If a target is not displayed or displayed in an abnormal configuration, the reason must be clearly stated and diagrammed.
5. The log will be filled in for the period specified in the alerting orders. Exceptions will be noted in "Remarks" at the lower right hand section of the log.
6. All "T" columns will always be noted in Greenwich Mean Time (Zulu).
7. A visual estimate of percent cloud cover by on-site personnel is required. If the cloud cover exceeds 25 percent also list the cloud type(s) (cumulus-Cm, Cirrus-Ci, or Stratus-S). Total overcast will be noted, when applicable. Other nonmeasurable environmental phenomena will be noted when appropriate, e.g., dust storms, various forms of precipitation, blowing sand, etc.
8. All of the requested information under the heading "Hasselblad Camera Data" must be completed.

LOCATION REPORT
(See Figure 14, page 29.)

1. This report will be made in duplicate, the original being forwarded to [redacted] 25X1 and the second copy retained at the field unit home office.
2. Each field unit is required to measure obvious areas of extensive, easily recognizable terrain and/or cultural features on the report sketches, i.e., areas of sand, asphalt, grass, buildings, trees, etc.

Figure 14, page 29 is an example of the type of information/symbolization that is required on all location sketches. The Basic Legend as set forth on this illustration should be adhered to when possible. Source map nomenclature will be fully described to include map title, series, production unit, scale and date. All source map reference points must be included in the Location Report. These are the most important reference points on this form, so they must be accurately portrayed.

Field units are required to use overlay material to indicate their plotted coordinates. This overlay will be forwarded to [redacted] 25X1 for coordinate verification. Coordinates

SITE MANNING REPORT

LOCATION _____ TARGET DISPLAYED _____ DATE _____ OPERATOR _____

GMT TIME 15 MIN INTERVALS	ESTIMATED CLOUD COVER AND PIX NR.		COMPLETION TIMES						HASSELBLAD CAMERA DATA		
			"T" TARGET			EDGE			SHUTTER SPEED	F/STOP NO.	
			PANEL	TIME	TIME	PANEL	TIME				
			1								CAMERA NO.
			2								
			3								ASA NO.
			4								
			5								FILTER NO.
			6								
			7								FILM EMULSION NO.
			8								
			9								TARGET TYPE
			MIL STD 150A					GRAY SCALE			E.K. CALIBRATED
			PANEL	TIME	PANEL	TIME		PANEL	TIME		GRAY SCALE NO.
			1		15			BLACK			REMARKS.
			2		16			2			
			3		17			3			
			4		18			4			
			5		19			5			
			6		20			6			
			7					7			
			8					8			
			9								
			10					TRI-COLOR			
			11					PANEL	TIME		
			12					RED			
			13					BLUE			
			14					GREEN			

Figure 13. Site Manning Report Form

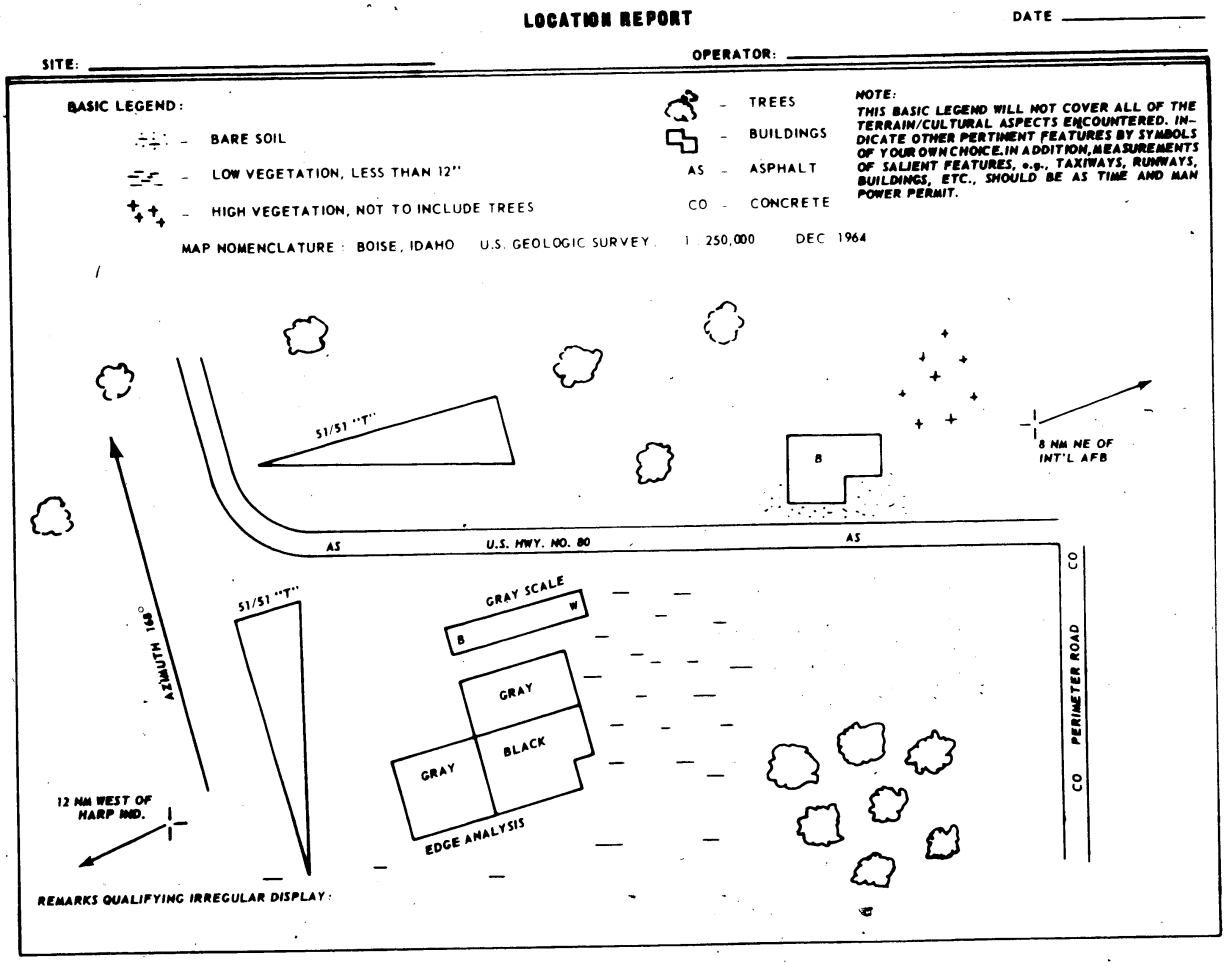


Figure 14. Location Report

will be reported to the nearest seconds, e.g., 30° 33' 30" N; 111° 55' 10" W.

Refer to note at the top of Fig. 14, page 29, and pay particular attention to the request for measurement information.

CORN RECAP FORM
(See Fig. 15, pages 31 and 32.)

A report must be submitted to the Range Manager immediately upon termination of each day of CORN operation. THIS PROCEDURE MUST BE ADHERED TO WITHOUT EXCEPTION.

The crew chief must be familiar with the standard time and Greenwich mean time (Zulu), and use of the 24 hour clock notation. Some examples are: 1 pm CST is 1300 hours (local) or 1900 (Z) Greenwich time. To compute Greenwich mean time, add the following: five hours for EST, six hours for CST, seven hours for MST, and eight hours for PST. No reference will be made to daylight saving time.

Two sample messages are included in Fig. 15, pages 31 and 32. All segments must be completely filled in.

FIELD UNIT RECAP MESSAGE FORMAT

1. Location (nearest town and city and state).
2. Date and inclusive times of display both in local and GMT (Z).
3. Geographic coordinates in degrees, minutes, and seconds.
4. Source map nomenclature.
5. Description of targets displayed.
6. Reason why display not accomplished if applicable.
7. Description of target location (utilize map reference points).
8. General weather conditions during display. (If a U.S. Weather Bureau Station happens to be in the vicinity of your area of operations, get as much meteorological data as you can, i.e., dewpoint, temperature, relative humidity, wind direction.

25X1

From:

To:

Subject: Operational Recap

1. Sheboygan Airport, Wisc.
2. 4 Aug. 65, 2250 Z to 2350 Z; 1650 CST to 1750 CST
3. 43° 50' 10" N; 87° 52' 20" W
4. ACIC-ONC-12; Feb. '59; 1 ; 1,000,000
5. (A) 80' Edge (B) 51/51 "T" Bar (C) Gray Scale
6. N/A
7. SE corner of airport, approximately 150 feet S of the E/W runway.
8. Clear

A. Example 1

1. Salton Beach, Calif.
2. 4 Aug. 65; 2020 Z to 2220 Z; 1220 PST to 1420 PST
3. 33° 20' 50" N; 97, 14' 08" W
4. ACIC-200 series, 0434-12HL, June '64, 2nd Edition, 1 : 200,000
5. (A) 80' Edge (B) Only leg A of 51/51 "T"
6. Rough terrain precluded the displaying of Leg B
7. One mile N of State Hwy 3, two miles NW of salton Sea airport
8. Clear

B. Example 2

Figure 15. Sample Operational Recap Messages (Sheet 1 of 2)

25X1

From:

To:

Subject: Operational Recap

1. Hope, Ark.
2. 4 Aug. 65, Time N/A
3. N/A
4. N/A
5. N/A
6. Heavy Rain
7. N/A
8. 100 percent cloud cover and rain

C. Example 3

1. El Paso, Texas
2. 4 Aug. 66; 2150 Z to 2350 Z; 1450 MST to 1650 MST
3. 31° 40' 15" N; 106° 10' 45" W
4. AMS-Series-V502; sheet NI 11-1; Dec '63; 1: 250,000
5. (A) 80' Edge (B) Pseudosinc (C) Gray Scale (D) Tri-color
6. N/A
7. Athletic Field halfway between U.S. 80 and RR tracks, 1 mile east of El Paso
8. 10 to 15 percent cloud cover.

D. Example 4

Figure 15. Sample Operational Recap Messages (Sheet 2 of 2)

OPERATIONAL CHECK LIST
(See Figure 16, page 31.)

The check list will bring to the reader's attention several of the most important aspects of the CORN operation. The Check List will be filled out, signed and dated by the crew chief. It will then be sent to the Range Manager.

PRE-DEPARTURE CHECKLIST

1. Are all requested targets (and panels) on board?

☐ 51/51 "T" Bar Target	☐ 56 panels
☐ Edge Analysis Target	☐ 19 panels
☐ Gray Scale	☐ 5 or ☐ 8 panels
☐ Tri Color	☐ 3 panels
☐ Mil. Standard 150A	☐ 20 panels

SPECIAL TARGET(S)

☐	☐ panels
☐	☐ panels
☐ Pegs	

2. Are all Hasselblad Ladder components on board?
   - ☐ Boom and Support
   - ☐ Bolts
   - ☐ Screw Down
   - ☐ Camera Screw

3. Are all instrumentation components in the foot locker?
   - ☐ Hasselblad camera, fillers, sunshade and filter holder, extra magazine, trip cord, light meter, film, calibrated paper gray scale.
   - ☐ Nikon camera, film, mailers.
   - ☐ Compass
   - ☐ Brightness meter, disc, strips, tripod (when applicable).
   - ☐ String
   - ☐ Log forms (Site Manning, CORN Recap, Location Report, etc.) (on Site Manning forms be certain to include film emulsion numbers).
   - ☐ Hasselblad Battery Check.

ON-SITE CHECK LIST

- ☐ Have you verified with the home office, exact coordinates for today's operation—prior to laying your first target?
- ☐ Have you obtained permission to use the site?
- ☐ Have you checked and <u>double</u> checked site coordinates?
- ☐ Have you allowed for the local magnetic declination of coordinates?
- ☐ Have you listed the inclusive times (both local and GMT) that the targets were displayed?
- ☐ Is the Hasselblad set on the <u>North</u> side of the target?
- ☐ Have you reset Hasselblad counter after a maximum of 4 exposures?
- ☐ Have you marked the Hasselblad with start or stop and field unit name?
- ☐ Did you use an "ID" card exposure for the Nikon camera? (Maximum distance – 4 feet from camera.)
- ☐ Have you <u>completely</u> filled in all <u>necessary</u> spaces on the appropriate forms?
- ☐ Have you contacted your home office to determine your next destination?

RETURN TO HOME FACILITY

- ☐ All equipment must be cleaned and stored in the instrument kit (footlocker).
- ☐ All targets must be cleaned, if necessary, and thoroughly dried (to prevent mildew).
- ☐ If targets are not rolled correctly, they should be correctly rolled and placed in their storage cell.
- ☐ Repair torn targets, and notify range manager immediately.
- ☐ Recharge Hasselblad batteries, as necessary.
- ☐ Replenish supply of film, film mailers, log forms, etc.
- ☐ Check your vehicle and clean the interior (both cab and trailer) after every trip.
- ☐ Be absolutely certain that every aspect of your targets/support equipment is in operational readiness!

Figure 16. Operational Check List

APPENDIX D

TARGET CARE AND MAINTENANCE

All field units will comply with the following rules in the care and maintenance of CORN targets.

1. Do not walk on targets.
2. Targets are to be kept in a dry, ventilated storage area.
3. Targets will be kept off the floor.
4. Bi-monthly inspection of stored targets will be conducted to prevent unseen mildewing.
5. All targets torn during operations are to be repaired immediately. Range Manager will be notified immediately.
6. Wet targets will be dried THOROUGHLY before storing.
7. Targets will be cleaned as necessary after each alert. Cleaning will range from a general sweepdown to a thorough job of scrubbing.
8. Washing of targets will consist of soaking with clear water or scrubbing with a scrub brush wet with a mild detergent and water emulsion.

CAUTION

Dry cleaning targets is forbidden. Dry cleaning solvents will fade or partially remove the coating pigments.